



INTERSESSIONAL MEETING OF THE
GREENHOUSE GAS WORKING GROUP
2nd session
Agenda item 2

GHG-WG 2/2/1
4 February 2009
ENGLISH ONLY

CONSIDERATION OF THE ENERGY EFFICIENCY DESIGN INDEX FOR NEW SHIPS

Input to further development of the Energy Efficiency Design Index

Submitted by the Netherlands

SUMMARY

<i>Executive summary:</i>	This document contains the outcome of a recently conducted Dutch study into application of the EEDI to existing ships, designed and/or built in the Netherlands, and contains proposals in regard of further development of the Index
<i>Strategic direction:</i>	7.3
<i>High-level action:</i>	7.3.1
<i>Planned output:</i>	7.3.1.3
<i>Action to be taken:</i>	Paragraph 14
<i>Related documents:</i>	MEPC 58/WP.8 and MEPC 58/23

Introduction

1 In support of the preparation for the second intersessional meeting of the Working Group on Greenhouse Gas Emissions from Ships, this submission provides input into the discussion on the further development of the Energy Efficiency Design Index (EEDI).

2 The text of this submission is related to item 1 of the Terms of Reference for the intersessional WG meeting.

3 This document is submitted in accordance with MSC-MEPC.1/Circ.2, Guidelines on the Organization and Method of Work.

Objective

4 The Terms of Reference for the second intersessional meeting contains the instruction in item 1 to “consider towards finalization” the EEDI for new ships, taking into account any trial application of the Index by calculation. The objectives of this submission are to highlight the findings of a recently conducted study by the Netherlands into the application of the EEDI to

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existing ships, designed and/or built in the Netherlands, and to formulate proposals in regard of further development of the Index. A copy of the report can be downloaded from the website: www.cmti.nl.

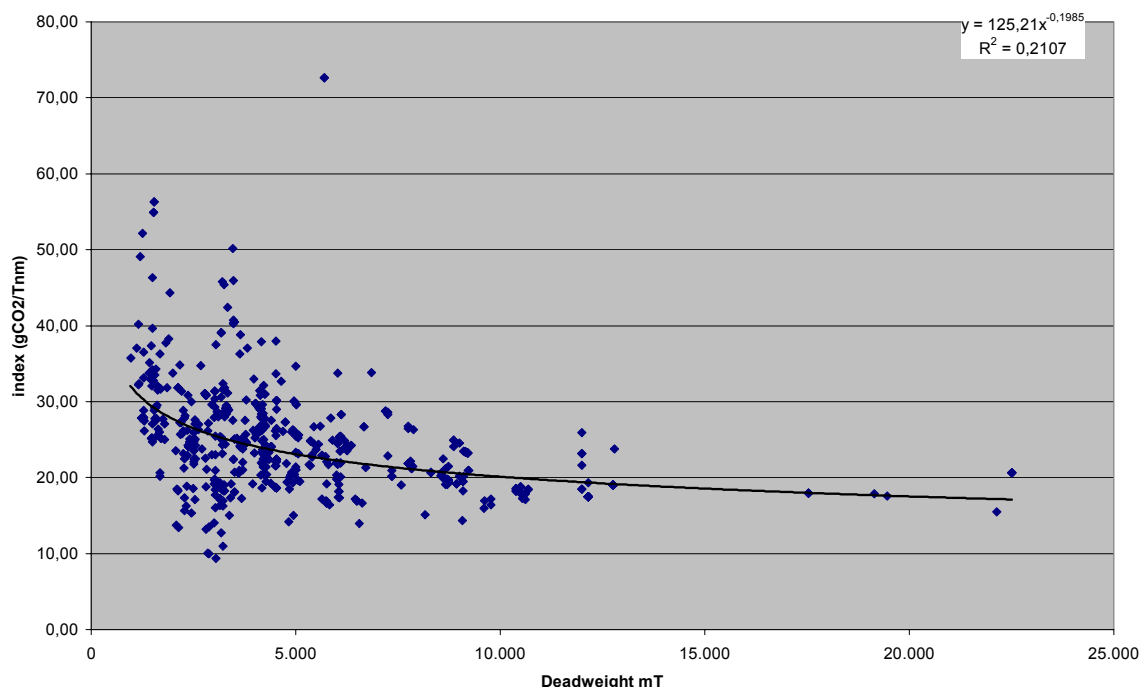
5 This submission deals not only with the trial application of the Index formulation, but also the verification procedure and the associated guidelines.

Trial applications

6 A trial application of the EEDI has been performed in a study by the Netherlands into the effects and robustness of the proposed Index. A trend analysis has been carried out on 1,150 ships, designed and/or built in the Netherlands, of the following ship types: tankers, general-purpose ships, dredgers, container vessels and offshore vessels. The majority of ships in this study, due to the specific nature of ships designed and/or built in the Netherlands, are in the deadweight range below 15,000 mt. For tankers and general-purpose ships, a trend analysis has been carried out on the development of the Index value during the past 30 years. The last part of the study consists of a detailed analysis of the formula.

7 Also ship types like dredgers and offshore vessels, which at present are excluded from the list of ship-categories as considered for the Index application, are included in the study.

8 A typical example of the results is shown in the following graph. This graph shows the Index values of Dutch built general-purpose vessels. The observations and conclusions on these results are also representative for other ship types in the database.



Number of vessels: 623; Vessel type: general-purpose; Period: 1978-2008

8.1 Because of the large spread in Index value, it is not possible to construct a realistic trend line with a reasonable high value of the correlation coefficient. The correlation between Index values and ship types varies per ship type, but is in general rather poor.

8.2 The correlation between vessels improves with increasing the ship size. For vessels above 20,000 mt DWT it seems a trend line may be constructed. For tankers in particular a good correlation can be found for vessels larger than 20,000 mt DWT.

8.3 For vessels below 15,000 mt DWT, a large variation in Index values is observed. Considering the steep slope of trend lines for this size of vessels in this DWT range, it is not feasible to compose a trend line to be used as a basis for the development of a baseline. The large variation of the Index values for vessels below 15,000 mt DWT might be caused by the speed variation of the vessels of the same type.

8.4 Special ship types, like dredgers and offshore vessels, have a higher average Index value compared to general cargo ships, and a large spread in results. This is a result of the special usage of these vessels. A specific Index formula which takes into account the specific functionality and characteristics of these ship types can solve these concerns.

Verification

9 The present definition of V_{ref} is consistent with the definition of capacity and power of a vessel. However, the procedure for determination of the value of V_{ref} has to be defined transparently and unambiguously, in such a way that the result can be verified in a practical manner.

10 Sea trials are often carried out in conditions that do not match with the conditions prescribed by the Design Index. Sea conditions during these trials may vary and many ships will sail in ballast conditions. Therefore it is proposed to calculate V_{ref} from data representing the final design, in which results of model tests are included. It is also proposed to include model tests at the deepest operational draft in the eventual model test programmes.

Proposals

11 The construction of a baseline for vessels below 15,000 mt DWT, based on the present definition of the Index, is not recommended. Therefore it is proposed not to develop mandatory baselines for any type of vessel in this DWT range, based on the proposed Index formulation.

12 The construction of baselines for vessels above 20,000 mt DWT may be considered. It is proposed to develop tentative baselines for tankers and bulk carriers above 20,000 mt DWT. The effectiveness validity of these tentative baselines should be investigated during a trial period. A prerequisite is that the definition of V_{ref} should be reviewed and based on design calculations.

13 For special ship types, e.g., dredgers and offshore vessels, specific Index formulae should be developed, containing parameters representing the design functionality of these vessels and expressing the benefit to society that fits these ship types.

Action requested of the Intersessional Meeting

14 The Intersessional Meeting is invited to consider the proposals provided in this document during its deliberations on the EEDI and take action as appropriate.